

SSVEO IFA List

Date:02/27/2003

STS - 92, OV - 103, Discovery (28)

Time:03:53:PM

<u>Tracking No</u>	<u>Time</u>	<u>Classification</u>	<u>Documentation</u>	<u>Subsystem</u>	
MER - 3	MET: 000:14:47:43.000	Problem	FIAR	IFA STS-92-V-01	C&T - Ku-band
INCO-01	GMT: 286:14:07:00.000		SPR 92RF03	UA	Manager: Rasik Patel
			IPR 102V-0003	PR	714-372-6711
					Engineer: Marty O'Hare
					281-853-1592

Title: Ku-Band System Failed (ORB)

Summary: At approximately 286:14:07 G.m.t. (000:14:50 MET), the Ku-band system failed to transmit or receive in the communications mode. Troubleshooting consisted of power cycling the Ku-band system and performing self tests. The power cycle did not recover transmit or receive capabilities and the self tests failed. Circuit analysis suggests that the most probable cause of the failure is the exciter sub-SRU located within the DEA. The exciter is a common circuit associated with the forward and return link functions as well as the self test. During the rendezvous operations, the Ku-band system did not work in the radar mode. The hardware was configured with gimbals locked and powered off. The antenna was stowed following the EVAs.

KSC troubleshooting showed that the reference 156 mhz frequency is good coming out of EA-1; however, the local oscillator frequency was not nominal coming out of the DA test cables. The problem isolated to the deployed electrical assembly. The results of the troubleshooting indicate a DA removal and replacement is required. No Ferry constraints.

<u>Tracking No</u>	<u>Time</u>	<u>Classification</u>	<u>Documentation</u>		<u>Subsystem</u>
MER - 4	MET: 000:15:57:43.000	Problem	FIAR	IFA STS-92-V-02	ODS
MMACS-02	GMT: 286:15:17:00.000		SPR 92RF04	UA	Manager: D. T. To
			IPR	PR	714-372-5033
					Engineer:

Title: ODS C/L Camera Misalignment (ORB)

Summary: At approximately 286:15:17 G.m.t. (000:16:00 MET), the crew called down that the primary ODS C/L camera was misaligned. They reported that at 10? zoom, the monitor-generated crosshair was just outside the target circle in the lower left. At 39? zoom, the monitor-generated crosshair was just inside the target circle at the upper right. The primary camera was removed and the backup camera was installed. The crew reported that the misalignment was much worse and that the crosshair did not appear in the target circle at any zoom setting. The crosshair was below the target circle and slightly to the left with the camera zoomed in. As the camera was zoomed out, the crosshair moved to the right. The crew reinstalled the primary camera and noticed some raised paint around the mounting holes.

The crew was asked to take digital photos of the aft flight deck monitor with each camera installed and zoom settings of 10?, 22? and 39?. The primary camera was determined to be acceptable for the rendezvous and docking. A mission chit was submitted requesting that the crew perform some troubleshooting of the misalignment. The troubleshooting was not performed due to crew workload and timeline constraints. Postflight, KSC will perform the normal alignment checks. Additional troubleshooting on OV-103 hardware will be based on the OV-104 troubleshooting results. No Ferry constraints.

<u>Tracking No</u>	<u>Time</u>	<u>Classification</u>	<u>Documentation</u>	<u>Subsystem</u>
MER - 6	MET: 002:13:38:01.000	Problem	FIAR	IFA STS-92-V-03 OSVS
EGIL-01	GMT: 288:12:57:18.000		SPR	UA Manager: George Glenn
			IPR 102V-0005	PR 281-483-1516
				Engineer:

Title: Cabin Payload 3 Bus Loss (RMS)

Summary: At 288:12:57:18 G.m.t. (002:13:40:18 MET), a 14 amp current increase was observed on mid main bus B. Approximately 2.5 seconds later, the current dropped 20 amps. During this same time period, the Orbiter interface unit (OIU) 1 and the Orbiter space vision system (OSVS) was lost. A review of the equipment lost indicated that the cabin payload (CABPL) 3 bus was lost. With the loss of the CABPL 3 bus, the function of the keel camera, RMS side view camera, ODS C/L camera, payload timing buffer, and DDCU starboard system B heater were also lost.

The CABPL 3 bus is powered by a 15 amp RPC which receives its power from the Orbiter mid main bus B when the Cabin Payload power switch is in the main B position. The observed current spike equates to the signature expected when the output of a 15 amp RPC is shorted (125 to 150% of rated load for 2 to 3 seconds, then trips off). OIU 2 was used for ISS data and the spare OSVS unit was powered from the panel A11 DC utility outlet using the breakout box. To protect the RPC from being reset, the crew placed a switch guard over the Cabin Payload switch. Evaluation has isolated three components, a 35 amp diode in the MPCA2, the OSVU, and the keel camera, as the potential cause based upon the current spike signature and their circuit protection device characteristics. Though considered unlikely, a wiring short is also a potential cause. In-flight workarounds have been evaluated in the event of additional failures. At JSC the OSVU failed the pin-to-pin test in both directions, but passed the pin to chassis test for both pins. Unit is now being packaged for shipment to Canada for further troubleshooting/repair. KSC will performed post flight troubleshooting on the

vehicle. No Ferry constraints.

<u>Tracking No</u>	<u>Time</u>	<u>Classification</u>	<u>Documentation</u>		<u>Subsystem</u>
MER - 15	MET: 009:15:07:43.000	Problem	FIAR	IFA STS-92-V-04	Hydraulics
MMACS-08	GMT: 295:14:27:00.000		SPR 92RF07	UA	Manager: Shahram
			IPR 102V-0009	PR	Namvari
					714-934-0523
					Engineer: Jeff Goza
					281-853-1612

Title: WSB 3 Vent Temperatures Erratic on Controller B (ORB)

Summary: At approximately 295:14:27 G.m.t. (09:15:10 MET), during the WSB 3 vent heater operation prior to FCS checkout, slightly off nominal heater cycling was observed while on the B controller. Following FCS checkout, a bakeout was performed to ensure that there was no ice accumulation in the vent nozzle. An ice signature was not observed during the bakeout. During the pre-entry operation of the WSB 3 vent heater on flight days (FDs) 12 and 13, off nominal heater cycling was again observed on the B controller. The heater on and off points appeared to be changing with each heater cycle within a band of 140 to 190 °F. During the FD 13 operation, WSB 3 was switched to the A controller, and the heater cycles were normal. The B controller was subsequently reselected and normal heater cycles continued. The B controller was again selected on FD 14 during deorbit preparations and the vent did not come up to temperature. The A controller was selected and the heater performed nominally.

Hardware removal and replacement is planned. No Ferry constraints.

<u>Tracking No</u>	<u>Time</u>	<u>Classification</u>	<u>Documentation</u>		<u>Subsystem</u>
MER - 16	MET: 012:20:45:16.000	Problem	FIAR	IFA STS-92-V-05	Hydraulics
MMACS-10	GMT: 298:20:04:33.000		SPR 92RF08	UA	Manager: Shahram
			IPR 102V-0016	PR	Namvari
					714-934-0523
					Engineer: Jeff Goza
					281-853-1612

Title: WSB 2 Vent Temperature Dropped Off on Control A (ORB)

Summary: WSB #2 vent nozzle temperature dropped off prior to APU/HYD system #2 start up. Normally the vent temperature decreases after spray cooling is observed

on the corresponding boiler. The drop in temperature was slower than what is typically observed during spray cooling initiation.

Hardware removal and replacement is planned. No Ferry constraints.

<u>Tracking No</u>	<u>Time</u>	<u>Classification</u>	<u>Documentation</u>		<u>Subsystem</u>
MER - 14	MET: 010:14:59:43.000	Problem	FIAR	IFA STS-92-V-06	Active Thermal Control
EECOM-03	GMT: 296:14:19:00.000		SPR 92RF09	UA	Subsytem
			IPR 102V-0008	PR	Manager: Son Nguyen
					714-372-5058
					Engineer: Carmelo
					Asuncion
					281-853-1635

Title: FES Shutdowns on Primary B Controller (ORB)

Summary: At 296:14:19 G.m.t. (10:15:02 MET), after the radiator bypass and flash evaporator system (FES) check-out, the FES primary B controller shut down in full up mode. After the shutdown, the hi-load duct heaters were configured to A/B to preclude ice formation in the inboard ducts. An entry pocket checklist procedure to flush the high load core was initiated after the shutdown. Following the flush procedure the high load was allowed to run on secondary controller for 7 minutes per the procedures. After that time, a restart on the primary B controller in full up mode was attempted resulting in a second shutdown. The FES was then successfully restarted on the primary A controller.

For the FES checkout on the second landing day opportunity, a modified Rad Bypass/FES checkout was performed. The secondary Hi-Load on the B feedline controlled the Evap Out temperature nominally at 62 degree F. This checkout, together with other FES operations run at different times during the mission, helped to clear the B feedline and the spray valve of being the cause of the shutdown. The mid point sensor is believed to be the cause of the problem and troubleshooting will start with this hardware. No Ferry constraints.

<u>Tracking No</u>	<u>Time</u>	<u>Classification</u>	<u>Documentation</u>		<u>Subsystem</u>
MER - 11	MET: 006:15:08:43.000	Problem	FIAR	IFA STS-92-V-07	OI
INCO-02	GMT: 292:14:28:00.000		SPR 92RF06	UA	Manager: Bill McKee
			IPR 102V-0007	PR	281-853-1587

Engineer:

Title: Dedicated Signal Conditioner OM2 Card 22 Failed (ORB)

Summary: At 292:14:28 G.m.t. (006:15:11 MET), dedicated signal conditioner (DSC) OM2 card 22 failed causing 4 measurements to go off scale low at -75 F. The 4 measurements are three hydraulic system temperatures and 1 APU temperature measurement. The hydraulic system measurements are the left inboard elevon actuator return line temperature (V58T0257A), the left main landing gear brake line temperature B (V58T1701A), and the right main landing gear brake line temperature D (V58T1753A). The APU measurement is the APU 3 H2O line temperature (V46T0503A).

The left inboard elevon actuator return line temperature is one of several that are in the control logic for circ pump 2 runs. Its loss had no mission impact. The hydraulic brake line temperatures monitor heater operation on those lines and the loss of that insight had no mission impact. Finally, the APU H2O line temperature monitors heater operation for the APU injector cooling system. There was no impact expected from the loss of insight into the operation of this heater. During post-flight troubleshooting KSC removed Card 22 S/N 95A. The initial replacement card (S/N 148A) had a bent guide pin; therefore, a new card(S/N 092A) was obtained and installed in DSC OM2. Checkout of this card was good. The DSCOM2 was then re-installed into OV-103. Power up of OV-103 verified the four measurements on card 22 were good.
